

STANDARDS DEVELOPMENT BRANCH OMOE



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THE
ONTARIO WATER RESOURCES
COMMISSION
WATER POLLUTION SURVEY
of the
VILLAGE OF LUCKNOW

1966

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R E P O R T

on

WATER POLLUTION SURVEY

of the

VILLAGE OF LUCKNOW

April 1966

Division of Sanitary Engineering.

R E P O R T

ONTARIO WATER RESOURCES COMMISSION

INTRODUCTION

A water pollution survey was carried out in the Village of Lucknow on May 19 and June 21, 1965. A previous survey was carried out in 1964. The purpose of the surveys was to determine if sources of pollution existed in the village and if same were contributing to pollution of the Lucknow River.

The 1964 water pollution survey report stated, in part, that:

1. The results of samples taken in the Village of Lucknow indicate that contaminated waste is being discharged to the Lucknow River.

2. The pollution of the river may be corrected by adequate individual treatment systems or by a municipal treatment works. The report also carried the recommendation "that the Village of Lucknow take the necessary action to prevent the discharge of contaminated wastewater to the Lucknow River".

OBSERVATIONS

The results of the laboratory examination of the samples collected on May 19 and June 21 are appended. These results indicate that there is a definite impairment of the Lucknow River as it passes through the village, the greatest impairment occurring in the business section.

In 1961 a pollution survey report was prepared by the Bruce County Health Unit staff covering the commercial area of the village. This report points out the various establishments where private sewage disposal systems are inadequate or are questionable, resulting in discharges of sanitary wastes to the river. The report also points out that many of the commercial establishments do not have sufficient land area to contain private disposal systems. From such premises the waste is discharged directly to the river or storm sewers. Observations made at the time of the 1965 survey confirm the observations contained in the Health Unit report.

SUMMARY

A water pollution survey was carried out in the Village of Lucknow on May 19 and June 21, 1965.

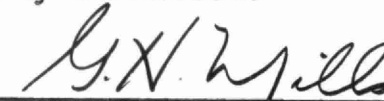
The observations of the 1964 report were confirmed. The commercial area of the Village of Lucknow contributes significantly to the pollution of the West Branch of the Lucknow River.

RECOMMENDATION

The Village of Lucknow should take the necessary steps to prevent the discharge of domestic wastes to the Lucknow River.

All of which is respectfully submitted.

Approved by:



G.H. Mills, P.Eng.,
District Engineer,
Division of Sanitary Engineering.

/ek

APPENDIX

EXPLANATION AND SIGNIFICANCE OF LABORATORY ANALYSES

ALL THE LABORATORY TESTS INCLUDED IN THIS REPORT WERE PERFORMED AT THE ONTARIO WATER RESOURCES COMMISSION LABORATORY IN TORONTO.

A. BACTERIOLOGICAL EXAMINATION

THE MEMBRANE FILTER TECHNIQUE IS USED TO OBTAIN A DIRECT ENUMERATION OF COLIFORM ORGANISMS. THESE ORGANISMS ARE NORMAL INHABITANTS OF THE INTESTINES OF MAN AND OTHER WARM-BLOODED ANIMALS. THEY ARE ALWAYS PRESENT IN LARGE NUMBERS IN SEWAGE AND ARE GENERALLY MINIMAL IN OTHER WATER POLLUTANTS.

THE RESULTS OF THE EXAMINATIONS ARE REPORTED AS "M.F. COLIFORM COUNT PER 100 ML".

THE COMMISSION'S OBJECTIVE FOR STREAM SANITATION IS A COLIFORM DENSITY OF NOT GREATER THAN 2,400 ORGANISMS PER 100 ML.

B. SANITARY CHEMICAL ANALYSES

BIOCHEMICAL OXYGEN DEMAND (BOD):

BIOCHEMICAL OXYGEN DEMAND IS REPORTED IN PARTS PER MILLION (PPM), AND IS AN INDICATION OF THE AMOUNT OF OXYGEN REQUIRED FOR THE STABILIZATION OF DECOMPOSABLE ORGANIC MATTER IN THE WATER. THE COMPLETION OF THE LABORATORY TEST REQUIRES FIVE DAYS, UNDER THE CONTROLLED INCUBATION TEMPERATURE OF 20°C.

THE COMMISSION OBJECTIVE FOR STREAM WATER QUALITY IS AN UPPER LIMIT OF 4 PPM.

SOLIDS:

THE VALUE FOR TOTAL SOLIDS, EXPRESSED IN PARTS PER MILLION (PPM), IS THE SUM OF THE VALUES FOR THE SUSPENDED AND THE DISSOLVED MATTER IN THE WATER. THE CONCENTRATION OF SUSPENDED SOLIDS IS GENERALLY THE MOST SIGNIFICANT OF THE SOLIDS ANALYSES IN REGARD TO STREAM WATER QUALITY.

THE EFFECTS OF SUSPENDED SOLIDS IN WATER ARE REFLECTED IN DIFFICULTIES ASSOCIATED WITH WATER PURIFICATION, DEPOSITIONS IN STREAMS, AND INJURY TO THE HABITAT OF FISH.

WHERE SUSPENDED SOLIDS VALUES ARE LESS THAN 20 PPM LABORATORY DIFFICULTIES ARE EXPERIENCED AND THE TURBIDITY IS DETERMINED INSTEAD.

TURBIDITY:

TURBIDITY IS CAUSED BY THE PRESENCE OF SUSPENDED MATTER, SUCH AS CLAY, SILT, FINELY DIVIDED ORGANIC MATTER, PLANKTON AND OTHER MICROSCOPIC ORGANISMS IN WATER. IT IS AN EXPRESSION OF THE OPTICAL PROPERTY OF A SAMPLE AND RESULTS ARE REPORTED IN "SILICA UNITS".

TABLE I

VILLAGE OF LUCKNOW - WATER POLLUTION SURVEY MAY 19 & JUNE 21 1965

NO.	DATE	SAMPLING POINT	DESCRIPTION OF LOCATION	5-DAY BOD (PPM)	TOTAL SOLIDS (PPM)	SUSPENDED SOLIDS (PPM)	DISSOLVED OXYGEN (PPM)	TURBIDITY UNITS	MF COLIFORMS PER 100 ML
1	MAY	LUW-17.4	LUCKNOW RIVER - WEST BRANCH 500 FT. UPSTREAM FROM SILVERWOOD DAIRIES DRAIN OUTLET	1.2	358	7	-	-	18,000
	JUNE			0.6	370	-	7.0	2.9	118
2	MAY	LUW-173-1	LUCKNOW RIVER WEST BRANCH SILVERWOOD DAIRIES DRAIN OUTLET	-	-	-	-	-	45,000
	JUNE			0.5	312	-	-	1.7	900
3	MAY	LUW-17-2	LUCKNOW RIVER - WEST BRANCH 500 FT. DOWNSTREAM FROM SILVERWOOD DAIRIES DRAIN OUTLET	-	-	-	-	-	670
	JUNE			0.6	396	-	-	3.1	86
4	MAY	LUW-17.0-D	LUCKNOW RIVER WEST BRANCH AT ROSE ST. DITCH OUTLET	6.4	502	15	-	-	32,000
	JUNE			0.7	400	-	8.0	2.8	350
5	MAY	LUW-16.8-D	LUCKNOW RIVER WEST BRANCH HAMILTON ST. DITCH OUTFALL	1.9	578	47	-	-	22,000
	JUNE			0.8	450	16	10.0	-	17,000
6	MAY	LUW-16.8-P	LUCKNOW RIVER WEST BRANCH- PRIVATE DRAIN OUTLET 100 FT. NORTH OF WHEELER STR.	0.4	386	2	-	-	136
	JUNE			0.5	400	-	9.0	0.8	1,900
7	MAY	LUW-16.7-W	LUCKNOW RIVER - WEST BRANCH AT STORM SEWER OUTLET SOUTH-EAST SIDE OF WHEELER STREET BRIDGE	1.3	504	21	-	-	20,000
	JUNE			50.0	1252	26	-	-	12,400

TABLE I - CONT'D.

VILLAGE OF LUCKNOW - WATER POLLUTION SURVEY MAY 19 & JUNE 21 1965

<u>NO.</u>	<u>DATE</u>	<u>SAMPLING POINT</u>	<u>DESCRIPTION OF LOCATION</u>	<u>5-DAY BOD (PPM)</u>	<u>TOTAL SOLIDS (PPM)</u>	<u>SUSPENDED SOLIDS (PPM)</u>	<u>DISSOLVED OXYGEN (PPM)</u>	<u>TURBIDITY UNITS</u>	<u>MF COLIFORMS PER 100 ML</u>
8	MAY	LUW-16.65-W	LUCKNOW RIVER, STORM SEWER OUTLET 100 FT. DOWNSTREAM FROM WHEELER STREET BRIDGE	0.3	588	2			
	JUNE			0.9	422	-	-	2.3	168
9	MAY	LUW-16.6-P	LUCKNOW RIVER - PRIVATE DRAIN OUTLET REAR OF THE STORES NORTH OF CAMPBELL STREET	6.0	670	5	-	-	600,000
	JUNE			18	498	17	-	-	14,100,000
10	MAY	LUW-16.6-W	LUCKNOW RIVER - PRIVATE DRAIN OUTLET - REAR OF STORES NORTH OF CAMPBELL STREET	11.5	1046	472			5,600,000
	JUNE			52	566	56	7.0	-	11,000,000
11	MAY	LUW-16.5-W	LUCKNOW RIVER - STORM SEWER OUTLET, REAR OF STORES SOUTH OF CAMPBELL STREET	-	-	-	-	-	-
	JUNE			0.7	604	-	8.0	0.8	18,300
12	MAY	LUW-16.5-P	LUCKNOW RIVER, PRIVATE DRAIN OUTLET, REAR OF STORES, SOUTH OF CAMPBELL STREET	120	666	75			
	JUNE			170	1224	126	-	-	570,000
13	MAY	LUW-16.4	LUCKNOW RIVER - WEST BRANCH AT WILLOUGHBY STREET BRIDGE						39,000
	JUNE			1.2	460	10	8.0	-	2,700

TABLE I - CONT'D.

VILLAGE OF LUCKNOW - WATER POLLUTION SURVEY MAY 19 & JUNE 21 1965

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8	MAY	LUW-16.65-W	LUCKNOW RIVER, STORM	0.3	588	2			
	JUNE		SEWER OUTLET 100 FT. DOWNSTREAM FROM WHEELER STREET BRIDGE	0.9	422	-	-	2.3	168
9	MAY	LUW-16.6-P	LUCKNOW RIVER - PRIVATE	6.0	670	5	-	-	600,000
	JUNE		DRAIN OUTLET REAR OF THE STORES NORTH OF CAMPBELL STREET	18	498	17	-	-	14,100,000
10	MAY	LUW-16.6-W	LUCKNOW RIVER - PRIVATE	11.5	1046	472			5,600,000
	JUNE		DRAIN OUTLET - REAR OF STORES NORTH OF CAMPBELL STREET	52	566	56	7.0	-	11,000,000
11	MAY	LUW-16.5-W	LUCKNOW RIVER - STORM	-	-	-	-	-	-
	JUNE		SEWER OUTLET, REAR OF STORES SOUTH OF CAMPBELL STREET	0.7	604	-	8.0	0.8	18,300
12	MAY	LUW-16.5-P	LUCKNOW RIVER, PRIVATE	120	666	75			
	JUNE		DRAIN OUTLET, REAR OF STORES, SOUTH OF CAMPBELL STREET	170	1224	126	-	-	570,000
13	MAY	LUW-16.4	LUCKNOW RIVER - WEST						39,000
	JUNE		BRANCH AT WILLOUGHBY STREET BRIDGE	1.2	460	10	8.0	-	2,700

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14	MAY	LUWX-16.5	LUCKNOW RIVER	1.2	386	3			480
	JUNE		TRIBUTARY AT CAMPBELL STREET, WEST LIMITS	70	458	13	-	-	440,000
15	MAY	LUWX-16.2	LUCKNOW RIVER	1.2	400	21			3,300
	JUNE		TRIBUTARY AT ROSS STREET	31	412	5	-	-	2,400
16	MAY	LU-16.0	LUCKNOW RIVER	1.0	324	2			2,200
	JUNE		CANNING STREET	1.1	366	10	7.0	-	2,100